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FROM: Mark D. Elchuk

RE: 10/654,765

Please let us know by phone or fax if you do not receive any of these pages.

COMMENTS:

Attached is a copy of the proposed amendment due 8/12/08 for your review preparatory to our telephone conference scheduled for Tuesday, August 5, 2008 beginning at 11:00 a.m.

Thank you.

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PATENT**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/654,765
Filing Date: September 4, 2003
Applicant: Paul S. Nordman
Group Art Unit: 1791
Examiner: Michael A. Tolin
Title: Transparent Fiberglass/Aluminum Skin Panel
Attorney Docket: 7784-000630

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT

Sir:

In response to the Office Action mailed May 12, 2008, please amend the application as follows and consider the remarks set forth below.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A method of forming a structural window panel for an airborne mobile platform, comprising:

using a plurality of non-fibrous, metal sheets to form a frame structure, wherein the metal sheets define ~~an~~ a continuous peripheral edge forming an opening therein;

providing a plurality of layers of generally optically transparent fiber pre-impregnated resin tape, where a resin of the tape comprises an aliphatic epoxy resin ~~resistant to shrinkage~~, and has an index of refraction that generally matches an index of refraction of a plurality of fibers of said tape;

interleaving said plurality of layers of generally optically transparent, fiber pre-impregnated resin tape between the metal sheets to substantially cover an entire surface portion of each one of the metal sheets and to fill the opening, the layers of pre-impregnated resin tape extending substantially to outer peripheral edges of the metal sheets;

heating the metal sheets and the fiber pre-impregnated resin tape layers as a unitary assembly within a tool such that the resin in each said pre-impregnated tape layer melts and substantially covers the metal sheets and fills the opening, said layers of optically transparent fiber pre-impregnated resin tape, said metal sheets and

said aliphatic epoxy resin imparting a needed degree of structural strength to the window panel; and

once cured, the generally transparent, fiber pre-impregnated resin tape layers and metal sheets form a structural panel having a see-through window portion in the frame structure.

2. (Cancelled)

3. (Previously Presented) The method of claim 1, wherein the fiber pre-impregnated resin tape layers each comprise a plurality of fibers impressed into a resin tape.

4. (Original) The method of claim 3, wherein the fibers are comprised of fiberglass.

5. – 6. (Cancelled)

7. (Previously Presented) The method of claim 1, wherein each said metal sheet comprises a plurality of metal foil strips.

8. (Cancelled)

9. (Previously Presented) The method of claim 1, wherein each said metal sheet is comprised of aluminum.

10. (Previously Presented) The method of claim 1, wherein each said metal sheet is comprised of titanium.

11. (Previously Presented) The method of claim 1, wherein each said metal sheet forms an opening, said openings corresponding to a window.

12. (Original) The method of claim 1, wherein the fiber pre-impregnated resin tape has a width of approximately 1/8" (3.175 mm) to about 12" (304.8 mm).

13. (Currently Amended) A method of manufacturing a fuselage having a transparent window skin panel for use with an airborne mobile platform, comprising:

providing a tool;

providing a pre-impregnated resin tape comprised of a plurality of fibers a impregnated with a shrinkage-resistant, transparent aliphatic epoxy resin, and where said plurality of fibers has an index of refraction that generally matches an index of refraction of a said aliphatic epoxy resin of said tape;

providing a non-fibrous, metal sheet having a plurality of spaced apart openings formed therein;

layering the pre-impregnated resin tape and the metal sheet onto the tool such that the metal sheet and the pre-impregnated resin tape are aligned one atop the other, such that the pre-impregnated resin tape completely covers the openings and overlays substantially an entire outer surface of the metal sheet;

heating the tool, the metal sheet, and the pre-impregnated resin tape such that the resin flows to substantially cover an entirety of the metal sheet and the fibers, the resin and fibers being substantially transparent to form a plurality of see-through window portions in the skin panel in the spaced apart openings; and

removing the skin panel from the tool and securing it to a portion of a fuselage of said airborne mobile platform.

14. (Cancelled)

15. (Currently Amended) The method of manufacturing a transparent window skin panel of claim 13, wherein providing a pre-impregnated resin tape, providing a metal sheet, and layering the pre-impregnated resin tape and the metal sheet onto the tool comprises using a plurality of metal sheets and a plurality of layers of pre-impregnated resin tape, and arranging the metal sheets and layers of pre-impregnated resin ~~tape~~tape in alternating layers.

16. (Cancelled)

17. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 13, wherein applying the pre-impregnated resin tape within any given layer comprises sandwiching a plurality of fiber pre-impregnated resin tape layers one adjacent another to fully cover the metal and to fully fill the openings in the metal sheet.

18. – 19. (Cancelled)

20. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 13, wherein the metal sheet is comprised of aluminum.

21. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 13, wherein the metal sheet is comprised of titanium.

22. (Original) The method of manufacturing a transparent window skin panel of claim 13, wherein the fibers are comprised of fiberglass.

23. – 24. (Cancelled)

25. (Original) The method of manufacturing a transparent window skin panel of claim 13, wherein the metal sheet comprises a plurality of metal foil strips.

26. – 28. (Cancelled)

29. (Original) The method of manufacturing a transparent window skin panel of claim 13, wherein the pre-impregnated resin tape has a width of approximately 1/8" (3.175 mm) to about 12" (304.8 mm).

30. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 13, further comprising placing a caul plate atop the metal sheet, the pre-impregnated resin tape, and the tool.

31. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 30, further comprising placing the caul plate, the metal sheet, the pre-impregnated resin tape, and the tool into a vacuum bag and removing the air therein.

32. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 13, wherein heating the tool, the metal sheet, and the pre-impregnated resin tape comprises using an autoclave.

33. (Previously Presented) The method of manufacturing a transparent window skin panel of claim 29, wherein the autoclave heats the tool, the metal sheet, and the pre-impregnated resin tape to approximately 350 degrees Fahrenheit under approximately 100 to 200 psi of pressure.

REMARKS

Claims 1, 3, 4, 7, 9-13, 15, 17, 20-22, 25 and 29-33 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

INTERVIEW SUMMARY

The undersigned wishes to express his appreciation to the Examiner for the courtesy of the telephone interview on _____, 2008 concerning the present application. (MDE to fill in details after interview).

REJECTION UNDER 35 U.S.C. § 112

Claims 1, 3, 4, 7, 9-13, 15, 17, 20-22, 25, and 29-33 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner cited the inclusion of the terminology "resistant to shrinkage" for the aliphatic resin as not being adequately supported in the specification. While the undersigned respectfully disagrees with this conclusion, the objected to language in claims 1 and 13 has been removed merely in the interest of expediting prosecution of the present application.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3, 4, 7 and 9-12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Day (U.S. Pat. No. 5,665,450) in view of the collective teachings of Demeester (U.S. Patent No. 5,885,714), Bain (U.S. Patent No. 4,793,108), Shorr (U.S. Patent No. 3,081,205), and Padden (U.S. Patent No. 5,500,272), and further in view of

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Luvisi (U.S. Patent No. 3,534,004). This rejection is respectfully traversed. More particularly, it is respectfully, yet strenuously, asserted that the combination of these references together to form an obviousness rejection is improper and based strictly on hindsight reconstruction.

For example, while Day may show a window that makes use of glass ribbon-reinforced transparent polymer composite material, Day is completely silent on manufacturing the window with one or more metallic, peripheral layers to provide additional strength at the peripheral edge of the window. In the Office Action the Examiner makes the statement:

"However, it is generally well known in the aircraft window manufacture to provide an embedded reinforcing material around the periphery of a window to provide improved strength and rigidity." (Office Action, pps. 3-4)

The Examiner proceeds to cite Deemester, Bain, Shorr and Padden for the proposition that it would have been obvious to one of ordinary skill in this art to have embedded one or more metal reinforcing sheets around the periphery of an aircraft window, and then makes the "jump" that it would be obvious to do so with the window of Day prior to heating to flow and cure the resin in the window of Day. However, there is no suggestion, or even *hint* of a suggestion, in Day or any of the previously mentioned references, that it would be helpful/possible to interleave one or more metal peripheral layers that have an opening, between layers of a transparent window structure made up of transparent fibers and a transparent resin that has an index of refraction that matches the index of refraction of the transparent fibers.

It is respectfully asserted that it would not have been initially obvious to use one or more metal interlayers with a composite transparent window structure, as recited in the independent claims, because of the obvious improved strength of a composite window panel by itself (i.e., transparent fibers with a transparent resin). Each of the window panels in the Deemester, Bain and Shorr patents cited by the Examiner involve simple plastic window structures, which the examiner will appreciate would almost certainly require significant reinforcing around their peripheral edges. Padden involves a composite layer with a titanium interlayer, but the multi-layer panel in Padden is not a window, nor is there any suggestion in Padden that it might be altered to form a window. With a composite window panel such as is being claimed in the present application, the desirability/need for a peripheral reinforcing structure would not be as immediately apparent to one of ordinary skill in this art. This is because of the significant added strength of a composite window. As evidence of this non-obviousness, the Examiner will note that Day makes no mention of the desirability of including an interleaved metal peripheral reinforcing edge portion as an integral portion of the window. It is also noteworthy that the Examiner has not cited any art involving composite windows that suggest the desirability to incorporate an interleaved, metallic, peripheral, edge-reinforcing structure during the manufacture of the window assembly.

The Examiner also remarks in the Office Action (p. 5) that the claims do not appear to distinguish over a single metallic frame structure which is provided by, for example, a strip of metal for each side of the frame. While the undersigned, again, does not necessarily agree with this determination, merely to expedite prosecution of this application, a minor amendment has been made to claim 1 to more positively point

out the operation that references the peripheral metallic frame portion. This portion of claim 1 is recited below in pertinent part:

*using a plurality of non-fibrous, metal sheets to form a frame structure,
wherein the metal sheets define ~~an~~ a continuous peripheral edge forming
an opening therein;*

It is believed that independent claims 1 and 13 now each clearly define over the cited references, and particularly the Shorr patent mentioned by the Examiner in the Office Action. With regard to Padden, it will be noted that Padden involves using a full layer of titanium as the metallic interlayer, and makes no mention of just forming the metallic interlayer as a peripheral member which only covers a peripheral edge portion of the composite layer of material to which it is assembled.

As to the newly cited patent to Luvisi (U.S. 3,534,004), the Examiner will note that, again, while this reference may discuss specific types of polymeric compositions, and particularly a polycyclic epoxide, there is no suggestion of using this compound in an aircraft window of the type being claimed. More particularly, an aircraft window having a peripheral reinforcing, metallic interlayer, and where the window has a construction of fibers and resin having matching indices of refraction. For at least these reasons, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 13, 15, 17, 20-22, 25 and 29-33 stand rejected as being obvious over Day in view of the collective teachings of Deemester, Bain, Shorr and Padden, and further in view of Luvisi, and further in view of Graff (U.S. Patent No. 3,074,832). The remarks presented above concerning the Day, Deemester, Bain, Shorr and Padden references are equally applicable here. It is most respectfully submitted that the teachings of

these references have been used in piecemeal fashion to hindsight reconstruct the claimed subject matter. For this reason reconsideration and withdrawal of this rejection is also respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: _____

By: _____
Mark D. Elchuk, Reg. No. 33,686

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MDE/tc